

HalfCat Mojave Sphinx Sinnoh Sphinx+ Recovery

February 2025

Modified Fiberglass Recovery

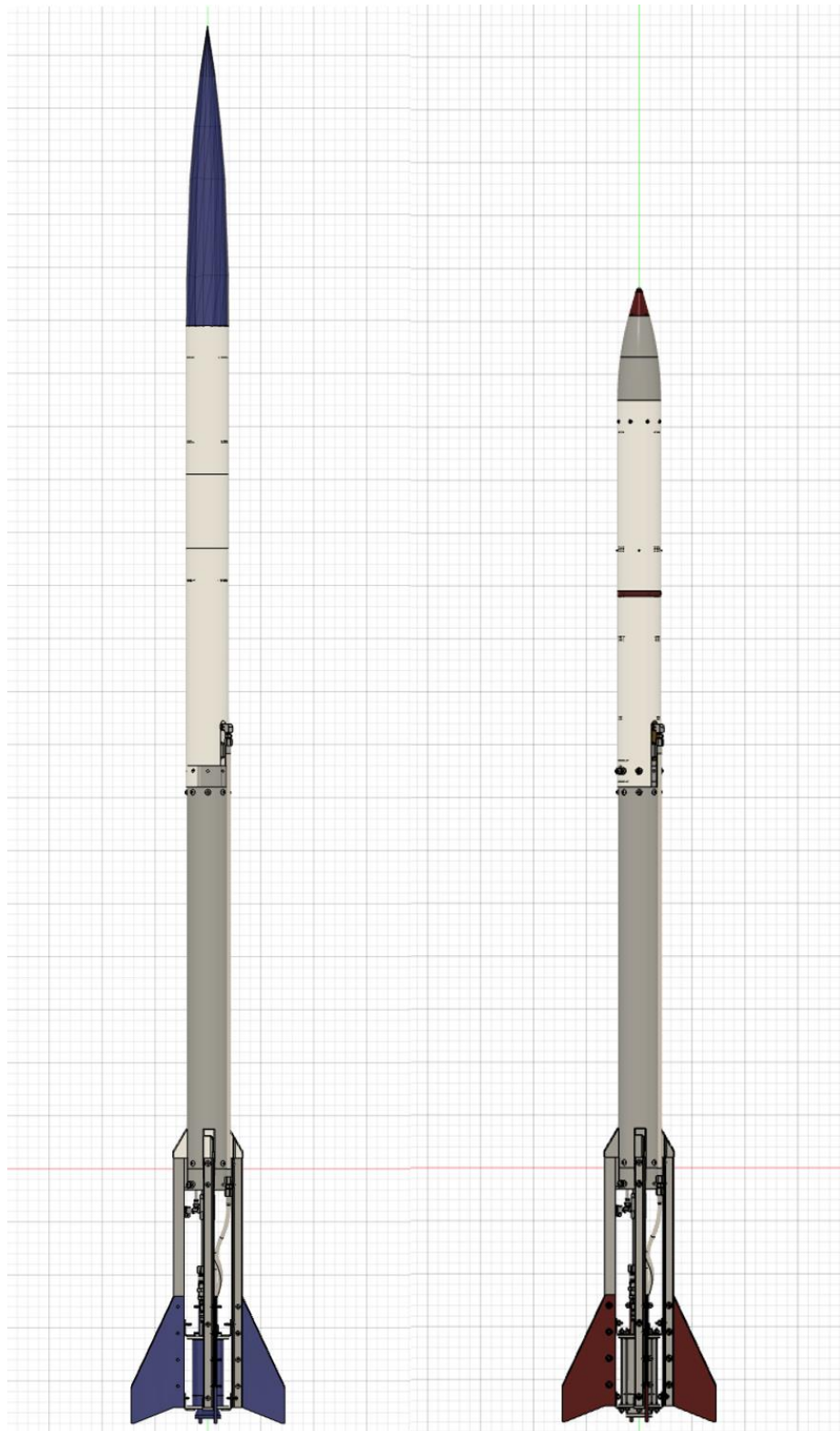
A big part of the "plus" in our Sphinx+ is the upgraded recovery section. It is a similar dual-deploy layout, but we used standard rocketry 4" fiberglass airframe and coupler, along with a commercial fiberglass nosecone (26" 5:1 Ogive). Our avionics bay is extended (13"), because we run our own flight computer ("Rocket Talk") and use a 12" 433 Mhz dipole antenna. Our avBay, nose, and aft bulkheads are all 1/8" aluminum with stainless steel u-bolt anchors. We use a nine foot Rocketman parachute and a three foot drogue with 1/2 kevlar shock cord from OneBadHawk. This gives us a soft landing in the 25fps range. Overall, our longer and heavier recovery section adds about five pounds to the build, but it is substantially stronger and will last longer (or survive harder landings).

The ID of 4" rocket fiberglass (e.g. Wildman Rocketry) is smaller than the cardboard ID specified in the Mojave Sphinx build, so you need to decrease the size of the INRG 200S airframe coupler to 3.9". The same is true for the Bulkhead Fuel Rec, AvBay bulkheads, and you will need a different bulkhead for the nose. In the nosecone we put our bulkhead about 6" from the tip and use the inside of the nose for the main chute.

Mike & Preston

@RocketTalk33 on the HC Discord

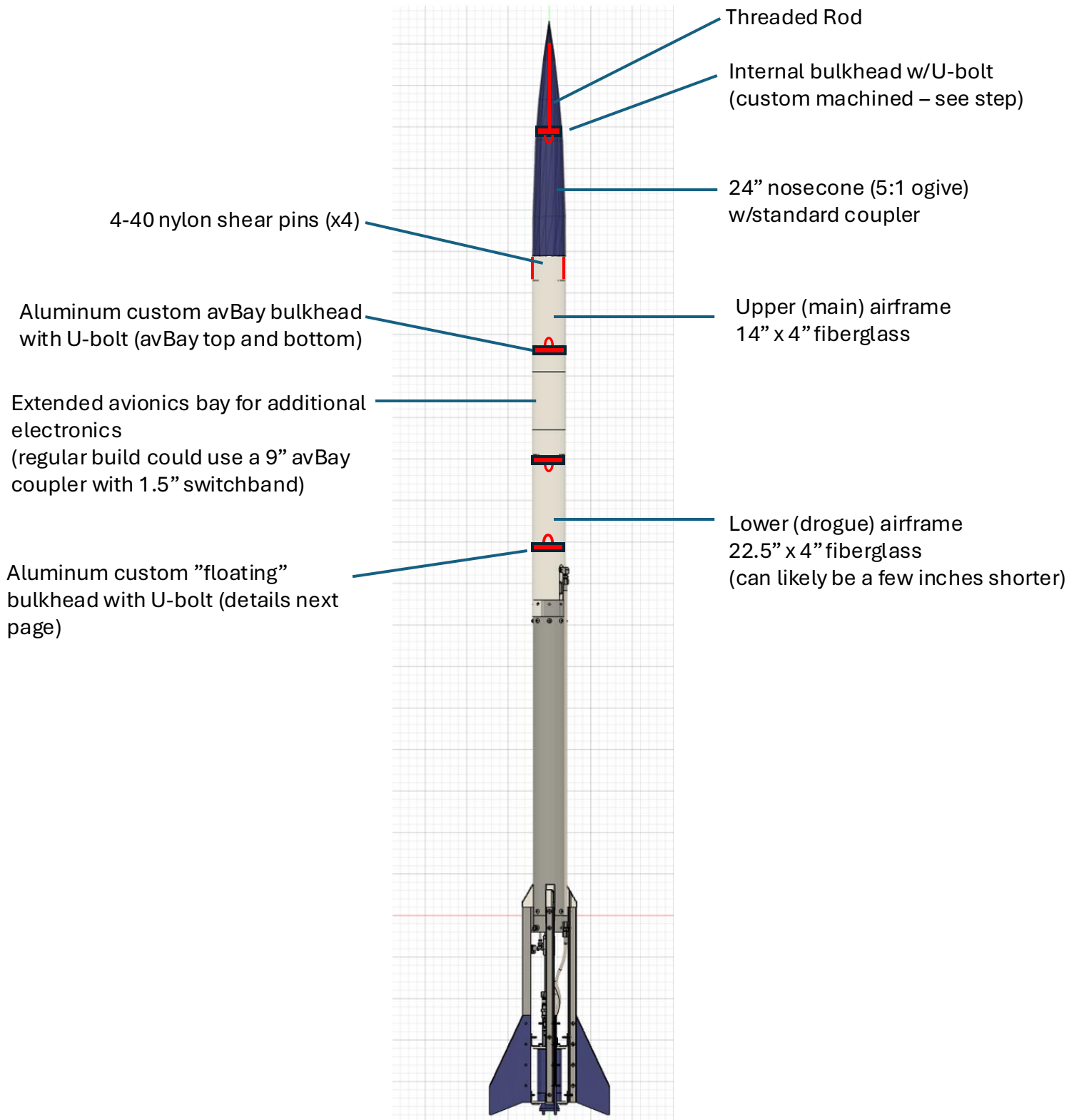
Recovery Comparison



Sinnoh Sphinx+
(Fiberglass Recovery)

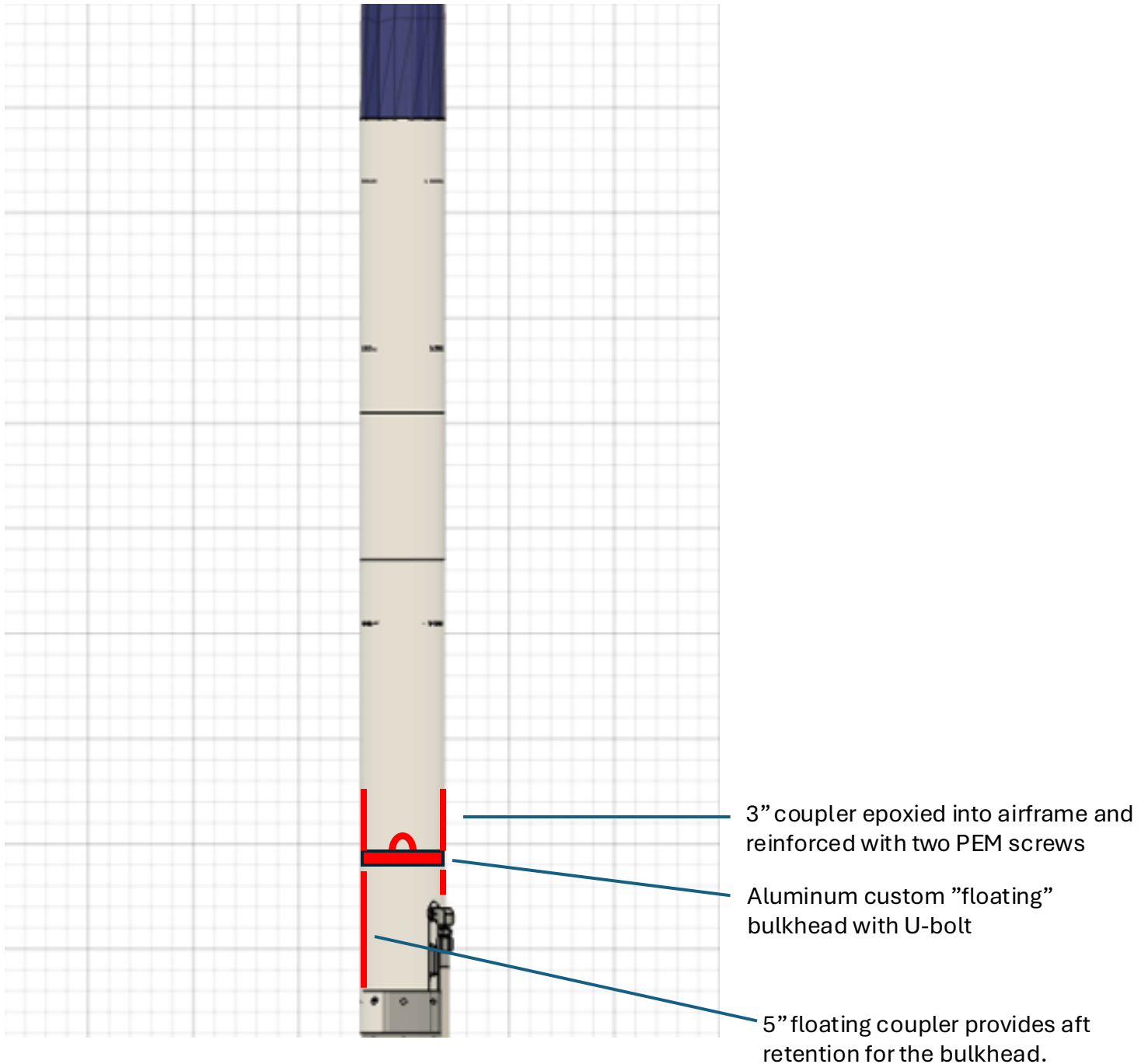
Mojave Sphinx

Recovery Specs



Sinnoh Sphinx+
(Fiberglass Recovery)

Floating AFT anchor plate



Note: use the same templates for airframe bolt holes and fuel plumbing cut-out. Use Dremel with carbon saw to cut fiberglass.

Extended Avionics Bay



Our avionics bay was extended to fit a long dipole antenna.

Note the machined aluminum bulkheads. These use standard $\frac{1}{4}$ " threaded rod and the spec'd HC U-bolts, along with Charge Wells (from Mad Cow) and wiring terminal blocks from Amazon.

BOM / Sources

Here is a list of the non-standard stuff we used for our recovery

1. 4" Fiberglass airframe (Wildman Rocketry [link](#))
 - Cut to 22.5" lower airframe and 14" upper airframe
2. 4" Fiberglass coupler for avBay (Wildman Rocketry [link](#))
 - Standard avBay would use 9"
3. 1" switchband for avBay (Wildman Rocketry [link](#))
4. 4" x 24" nosecone w/coupler 5:1 Ogive (Wildman Rocketry [link](#))
5. Rocketman 9 foot standard chute ([link](#))
6. Rocketman 3 foot drogue ([link](#))
7. 3/8" 30' tubular Kevlar shock cord 3 loop (x2) (Mad Cow [link](#))
8. Nylon 4-40 shear pins x 4 (Chris' rocket supplies [link](#))
9. Nosecone machined bulkhead (see STEP file)
10. avBay machined bulkhead x 2 (see STEP file)
 1. Charge wells x 4 ([link](#))
 2. Terminal blocks ([link](#))

For the lower airframe "floating" bulkhead see the other mod write-up here:
<https://github.com/AllDigital33/HCfuelMod/>